Rocky Flats
Environmental Technology Site

PRO-479-RSP-16.05

Revision 1

Radiological Survey/Sample Quality Control for Final Status Survey

Responsible K-H Org Radiation Protection Effective Date 5/22/01

Approved By Manager / Radiation Protection / 4/6/01
Title / Title of Organization / Date

W G Zurliene / /s/
Print Name / Approval Signature

J W Mahaffey
Print Name of Responsible Manager (N/A if RM is Approval Authority)

THE RESPONSIBLE MANAGER HAS DETERMINED THAT THE FOLLOWING ORGANIZATIONS' REVIEW/CONCURRENCE IS REQUIRED. REVIEW/CONCURRENCE DOCUMENTATION IS CONTAINED IN THE PROCEDURE HISTORY FILE

KH Analytical Services Division	371/374 Closure Project
KH D&D Site Closure	707 Closure Project
KH Quality Assurance	771 Closure Project
KH Radiological Engineering	776/777 Closure Project
Material Stewardship and Offsite Shipment Project	Engineering, Environmental, Safety, & Quality Programs
Remediation, Industrial Building D&D, & Site Services Project	

IMPORTANT NOTES

ISR Review SISRC 01-13 **SES/USQD Review** SES-RFP-01 0797-MAW

Periodic Review Frequency 4 years from the effective date
This document supersedes PRO-479-RSP-16 05, Revision 0

LIST OF EFFECTIVE PAGES

Pages	Effective Date	Pages	Effective Date
1-19	05/22/01		

Total number of pages 19

The following changes are active for this document

None

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1. PURPOSE

This procedure demonstrates the methods by which radiological surveys and samples meet the quality control (QC) criteria described in NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM) It is applicable during implementation of final status surveys (FSS) to collect and evaluate survey results in accordance with the Site Pre-Demolition Survey Plan (PDSP) It supports the Decommissioning Program Plan (DPP) by implementing criteria that will provide sufficient data to demonstrate that the Site has successfully completed decommissioning in conformance with the governing Rocky Flats Cleanup Agreement (RFCA) decision document It also ensures that the data quality objectives are met for MAN-076-FDPM, Facility Disposition Program Manual (FDPM) decisions and execution It additionally incorporates or references program criteria from the MAN-102-SRCM, Rocky Flats Environmental Technology Site Radiological Control Manual (Site RCM), 10 Code of Federal Regulations (CFR) 835, Occupational Radiation Protection, and 10 CFR 830 120, Quality Assurance Requirements

The reasons for the performance of Quality Control are to

- Define the probability of making incorrect decisions and clearly define the levels of uncertainty in measurements and radiological decisions
- Collect and analyze QC data to provide an estimate of the uncertainty associated with the survey

For any survey/sample that will be used as a Pre-Demolition Survey (PDS), a minimum number of measurements will be taken for QC purposes

2. SCOPE

This procedure applies specifically to Decontamination and Decommissioning (D&D) activities and supports implementation of the MARSSIM It presents the survey and sample QC criteria to support PDS, and therefore applies to personnel who collect, document, and evaluate data for instruments, surveys, or materials used for PDS Radiological Engineers (REs) will prepare survey packages as specified in PRO-475-RSP-16 01 (RSP-16 01), Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure, and will include the QC requirements described in this procedure in those survey packages

This revision supersedes PRO-479-RSP-16 05, Revision 0

3. OVERVIEW

Uncertainty in survey results arises primarily from survey design errors and measurement errors Survey design errors occur when the survey design is unable to capture the complete extent of variability that exists for the radionuclide distribution in a survey unit Measurement errors create uncertainty by masking the true level of residual radioactivity and may be classified as random or systematic errors Random errors affect the precision of the measurement systems, and show up as variations among repeated measurements Systematic errors show up as measurements that are biased to give results that are consistently higher or lower than the true values Adequate planning should minimize known sources of uncertainty, and QC data collected during implementation of the survey plan provide an estimate of the uncertainty The MARSSIM approach to minimizing sources of uncertainty ensures that judgmental surveys and samples are taken in areas where contamination is most expected Random surveys and samples are performed to demonstrate compliance with overall release limits in conjunction with introducing survey QC measurements to complement sampling and analysis QC requirements Precision is a measure of agreement among replicate measurements of the same property, under similar conditions Systematic errors, also called bias, accumulate during the measurement process and result from faults in sampling designs and procedures, sample contamination, losses, inaccurate instrument calibration, and differences in setting up or handling instruments by different operators The magnitude of the measurement system variability will be evaluated to determine if it approaches or exceeds the true but unknown variability in the population of interest Errors, bias, or data variability may otherwise accumulate to the point of rendering data unusable to achieve survey objectives

Uncertainty will be minimized by using appropriate calibrated instruments and qualified individuals Trained and qualified operators will use the Health Physics Instrumentation (HPI) Manual procedures for instrument calibration and maintenance and the Radiological Safety Practices (RSP) Manual for instrumentation (chapter 2), performing surveys (chapter 7), and Reconnaissance Level Characterization or Pre-Demolition Survey requirements (chapter 16) QC data will be evaluated per PRO-478-RSP-16 04 (RSP-16 04), Radiological Survey/Sample Data Quality Analysis for Final Status Survey

4. RESPONSIBILITIES

4.1 Radiological Engineer

Determines the number of QC measurement locations needed for the survey unit

Determines if a replacement, investigation, remediation, or other type of survey of a survey unit is required

Approves technical corrections/changes to the radiological survey/sampling package

4.2 RCT Technical Supervisor (RCTTS)

Assigns radiological QC surveys to Radiological Control Technicians (RCTs)

Reviews all radiological survey/sampling package survey forms for accuracy and completeness prior to technical evaluation of data

4 3 Radiological Control Technician (RCT)

Performs and documents radiological surveys in accordance with the applicable survey package and PRO-476-RSP-16 02, Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures

Provides initial review and signature of collected data

Provides complete, accurate, and legible documentation

Notifies the RCT Technical Supervisor of any out-of-tolerance or suspect radiological condition

5. PERSONNEL TRAINING AND QUALIFICATION

All personnel conducting surveys and performing other activities described in this document must receive final status survey training and qualify in the procedures performed Records of training, including testing to demonstrate qualification, must be documented

5.1 RCT / RCTTS

Individuals performing Pre-Demolition Survey (PDS), including QC checks shall be qualified as specified by Radiological Training on the applicable instrument(s), procedure(s), and sections of the Site RCM

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5.2 Radiological Engineer(s)

Radiological Engineers implementing this procedure shall

- Have satisfactorily completed the Radiological Engineering Radiological Control Entry Level qualification card
- Be formally trained in MARSSIM In addition, the training shall be complemented by participation in structured activities such as walkdowns, planning meetings, and development of work plans or packages that are distributed for peer review to ensure their adequate understanding of the principles and practices entailed Training will be documented within the Radiological Engineer qualification packages or other RFETS approved methods

6 REQUIREMENTS

This procedure contains requirements of Title 10 Code of Federal Regulations Part 835, Occupational Radiation Protection, and the MAN-102-SRCM, Rocky Flats Environmental Technology Site Radiological Control Manual (Site RCM), plus implementation criteria from MARSSIM, and cannot be changed without approval from the Site Radiation Protection Manager

6 1 Measurement/Data Acquisition

Data acquisition will be performed as specified in RSP-16 01 (Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure), that will be translated into specific survey packages for each facility Surveys will be performed in accordance with RSP-16 02, Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structure The sampling will be as specified in RSP-16 03, Radiological Samples of Building Media, and the data quality analysis and assessment will be conducted in accordance with RSP-16 04, Radiological Survey/Sample Data Quality Analysis for Final Status Survey Note that characterization and in-process surveys and samples conform to different DQOs than final status surveys and samples are critical and required to document compliance with release criteria Ensure that measurements collected during characterization or in process comply with PDSP criteria

Actual measurement results shall be documented with their units, backgrounds, and appropriate MDC calculations Measurements are NOT to be reported in terms of "<MDC " All data results shall be reported in the same units as the release limits Activities, measurement uncertainties, and other data pertaining to survey/sample accuracy will not be altered or rounded Recording raw numbers is required to later apply statistical analysis

6.2 Design Rationale

The purpose of the survey and sampling process is to obtain sufficient data during RLC to guide remediation and waste disposal, to track remediation progress during in-process characterization, and to verify remediation during final status surveys PDS will be accomplished through a combination of judgment and random surveys and sampling as appropriate and as specified in the survey packages The MARSSIM approach uses survey units to represent the fundamental elements for compliance demonstration using statistical tests to show with confidence that release criteria are met

6.3 Design Assumptions and Approach

Where an overlying media sample is collected (paint, surfactants, insulation, etc), the underlying surface will be surveyed directly If no contamination is found either by direct measurement or in the sample analysis and the media is judged to be nonabsorbent, it may also be assumed that volumetric contamination does not exist at that location, and that additional media samples will not be taken Similarly, where judgment sampling has not resulted in identifying contaminated media, random sampling will not be performed, although scanning and direct survey measurements will be The MARSSIM strategy is to classify areas as to their potential for contamination, as previously discussed, and then to apply a graded approach to design of a survey strategy

6.4 Methods Requirements

PDS survey and sample data, including those for QC surveys/samples, are collected as specified in the survey package, which is derived from RSP-16 01, RSP-16 02, and RSP-16 03 This will ensure that the data collected is representative and that bias is minimized to optimize precision Flaws and failures identified in the sampling process are addressed in RSP-16 04 Gross alpha, gross beta, tritium, and other analysis techniques are addressed in Analytical Services Division

Calibration sources are to be traceable to the National Institute of Standards and Technology (NIST) Where NIST-traceable standards are not available, standards obtained from an industry-recognized organization (e g , the New Brunswick Laboratory for various uranium standards) may be used

Inspection, maintenance, and calibration will continue to be performed as specified in Site RCM Chapter 5 Part 6 during Reconnaissance Level Characterization (RLC) and PDS All instruments approved for general site use may be used in support of RLC and PDS, but only instruments with a Minimum Detectable Activity (MDA) approved for free release use will be used to generate data for RLC and PDS Calibration procedures shall be approved and listed in the Health Physics Instrumentation (HPI) Manual, as required by the Site RCM

6.5 Handling and Custody Requirements

Samples will be managed to ensure there is an accurate record of sample collection, transport, analysis, and disposal to ensure that samples are neither lost nor tampered with and that the sample analyzed is traceable to a specific location in the field A chain of custody form (see PRO-543-ASD-002 Initiation, Preparation, and Implementation of Chain-Of-Custody Forms) provided by Analytical Services Division (ASD) will be completed for all samples submitted for laboratory analysis and will be included as part of the Project History File as well as required by 1-V41-RM-001, Records Management Guidance for Records Sources, or other approved Site procedures All sampling and survey data generated must be defensible and appropriate to their final use or the conclusions to be drawn from them Survey packages and associated data are to be protected as specified in Site RCM article 775 when not in use

If a survey is not completed by the original surveyor, the surveyor's records must be completed to the extent that the survey was performed The responsible Radiological Control Technician Technical Supervisor, or designee, will ensure a complete and accurate turnover to the next surveyor so that sampling integrity is maintained and data is comparable The subsequent surveyor will start new records to complete the balance of the survey

6 6 Analytical Requirements Documents

Samples will be analyzed as specified in Statement of Work for Analytical Measurements modules or as specified in the Basic Ordering Agreement Attachment 1, Statement of Work for Analytical Services and GR03, RFETS BOA Implementation Requirements Table 1 identifies applicable Analytical Requirements Documents

Table 1, Analytical Requirements Documents

Module Modifier	Title
BOA	National Basic Ordering Agreement
GR01	General Laboratory Requirements
GR02	Electronic Data Deliverables
GR03	RFETS BOA Implementation Requirements
RC01	Isotopic Determinations by Alpha Spectroscopy
RC02	Tritium Analysis by Liquid Scintillation Counting (LSC)
RC04	Gross Alpha and Gross Beta Analysis by Gas Flow Proportional Counting (GPC)
RC05	Radiometric Strontium by Gas Proportional Counting (GPC)
RC06	Total Uranium by Laser-Induced Phosphorescence

6 7 Instrument/Equipment Testing Requirements

For final status surveys, performance checks are performed as specified in 3-PRO-112-RSP-02 01, Radiological Instrumentation, and Site RCM Chapter 5 Part 5, but are to be performed both prior to and following surveys If an instrument response does not fall within the expected range, the instrument is to be removed from service until the reason for the deviation has been determined and appropriate corrective action has been taken

If an instrument fails the post-survey performance test, the data cannot be utilized, unless the cause of the failure can be specifically identified (e g , instrument is dropped) and a QA engineer reviews and accepts the data collected prior to the instrument failure

7. GLOSSARY

7.1 Acronyms

ASD	Analytical Services Division
BOA	Basic Ordering Agreement
CFR	Code of Federal Regulations
D&D	Decontamination and Decommissioning
$DCGL_W$	Derived Concentration Guideline Level-Wilcoxon Rank Sum test, normal limit
$DCGL_{EMC}$	Derived Concentration Guideline Level-Elevated Measurement Comparison, maximum limit
DOE	U S Department of Energy
DPP	Decommissioning Program Plan
DQA	Data Quality Assessment
DQI	Data Quality Indicators, i e , PARCC parameters
DQO	Data Quality Objectives
FDPM	Facility Disposition Program Manual
FSS	Final Status Survey, MARSSIM equivalent of PDS
FSSP	Final Status Survey Plan, MARSSIM equivalent of PDSP
FSSR	Final Status Survey Report
HPI	Health Physics Instrumentation
HSA	Historical Site Assessment
IPC	In-Process Characterization
MARSSIM	Multi-Agency Radiation Survey and Site Investigation Manual
MDA	Minimum Detectable Activity
MDC	Minimum Detectable Concentration
NIST	National Institute of Standards and Technology
PARCC	Precision, Accuracy, Representativeness, Completeness, and Comparability
PDS	Pre-Demolition Survey, also known as FSS
PDSP	Pre-Demolition Survey Plan, also known as FSSP
PDSR	Pre-Demolition Survey Report
QA/QC	Quality Assurance/Quality Control
RCM	Radiological Control Manual

RCT	Radiological Control Technician
RCTTS	Radiological Control Technician Technical Supervisor
RE	Radiological Engineer
RFCA	Rocky Flats Clean-up Agreement
RFETS	Rocky Flats Environmental Technology Site
RLC	Reconnaissance Level Characterization
RLCP	Reconnaissance Level Characterization Plan
RLCR	Reconnaissance Level Characterization Report
RSP	Radiological Safety Practices
V&V	Verification and Validation

7.2 Definitions

Accuracy- Measure of the closeness of an individual measurement or the average of a number of measurements to the true value

Bias- Systematic or persistent distortion of a measurement process, which causes errors in one direction, i e , the expected sample measurement is different from the sample's true value

Chain-of-Custody (COC)- An unbroken chain of accountability, as defined by signatures for release and acceptance of samples, data, and records

Collocated samples- Two or more samples collected at the same point in time and located adjacent to each other so as to be considered identical These samples are also known as field replicates and should be identified as such

Completeness- Measure of the amount of valid data obtained, as identified in a sampling plan, from a survey/sample package compared to the amount expected to be obtained under correct, normal conditions

Corrective action- Any measures taken to rectify conditions adverse to quality, and where practicable, to preclude their recurrence

Data Quality Assessment (DQA)- Scientific and statistical evaluation of data to determine if the data obtained from environmental operations is of the right type, quality and quantity to support the intended use The DQA process includes reviewing the data quality objectives and sampling design, conducting a preliminary data review, selecting the statistical test, verifying the assumptions of the statistical test, and drawing conclusions from the data DQAs are the qualitative and quantitative outputs from the DQO process

Data Quality Objectives (DQO) process- Systematic strategic planning tool based on the scientific method that identifies and defines the type, quality, and quantity of data needed to satisfy a specified use

Duplicate samples- Two samples taken from and representative of the same population and carried through all steps of the sampling and analytical procedures in an identical manner Duplicate samples are used to assess variance of the total method, including sampling and analysis See also *collocated sample*

Field blank- A blank used to provide information about contaminants that may be introduced during sample collection, storage, and transport A clean sample, carried to the sampling site, exposed to sampling conditions, returned to the laboratory, and treated as an environmental sample

Judgment sampling- Measurements performed at locations selected using professional judgment based on unusual appearance, location relative to known contaminated areas, high potential for residual radioactivity, general supplemental information, etc Judgment measurements are not included in the statistical evaluation of the survey unit data because they violate the assumption of randomly selected independent measurements Judgment measurements are individually compared to the release limits

Minimum Detectable Concentration (MDC)- Activity level that a specific instrument and technique can be expected to detect 95 percent of the time This is the value used to state the detection capability of an instrument, it is the L_D multiplied by an appropriate conversion factor to yield units of activity

Missing or unusable data- Measurements that are mislabeled, lost, or do not meet quality control standards

Representativeness- A measure of the degree to which data accurately and precisely represent a characteristic of a population, a parameter variation at a sampling point, a process condition, or an environmental condition

Sample- A quantifiable amount of a given media, normally intended to represent a specific location or a larger volume of the same media surrounding the sample location

Spike sample- An uncontaminated sample matrix spiked with known amounts of analytes from a source independent of the calibration standards Generally used to establish intralaboratory or analyst-specific precision and bias or to assess the performance of all or a portion of the measurement system

Survey- Field measurements, to determine contamination levels and contamination characteristics of a specified area

Trip blank- A clean sample of a matrix that is taken to the sampling site and transported to the laboratory for analysis without having been exposed to sampling procedures

Validation- Confirmation by examination and provision of objective evidence that the particular requirements for a specific intended use have been fulfilled In design and

development, validation concerns the process of examining a product or result to determine conformance to user needs

Verification- Confirmation by examination and by objective evidence that specified requirements have been fulfilled Verification concerns the process of examining a result of a given activity to determine conformance to the stated requirements for that activity

Volumetric- Having volume or mass, three-dimensional

8 LIMITATIONS AND PRECAUTIONS

NONE

9. INSTRUCTIONS

9.1 Survey Quality Control

The number of QC measurements is determined by the degree to which assurance is needed that a measurement process is adequately controlled The process is simplified when the scope of the survey is narrowed to a single method, crew, or laboratory Similarly, the number of required measurements increases with the number of samples or surveys and as action levels approach a given instrument's detection limit Establishing a set percentage of QC direct surveys/samples alone provides no real assessment of the uncertainties for a relatively small sample size, and as the number of measurements increase, a point is reached where no value is added for additional QC measurements Survey unit design should keep unit size within the range where percentages are useful and is addressed in PRO-475-RSP-16 01, Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure

NOTE *Survey replicates are to assess surveyor performance to avoid separate qualification through single- or double-blind examination It is advisable to use a different surveyor, if possible, to eliminate human factors from the QC data Any instrument (of the same model) that passes the QC checks delineated in 3-PRO-112-RSP-02 01, Radiological Instrumentation, and the HPI Manual should be statistically acceptable and may be used QC checks of the instruments and processes are addressed through performance checks (before and after surveys), qualitative analysis of survey results, and program/process assessments as per PRO-478-RSP-16 04, Radiological Survey/Sample Data Quality Analysis for Final Status Survey*

RE

[1] **WHEN** a final total surface activity measurement survey is complete,
THEN review the survey data and identify the locations for replicate direct measurement surveys

[A] Repeat a minimum of five percent (minimum of two measurements per survey unit) of the final total surface activity measurement surveys per survey unit

[B] Have the surveys performed as soon as practicable after completion of the initial survey, and based on the entire usable range of activity (i e , non negative results) found in the survey unit

RCT Technical Supervisor

[2] **WHEN** directed by the RE,
THEN assign an RCT to complete the QC total surface activity measurement surveys

[A] Assign the survey to a different surveyor than the one who performed the initial survey, and if possible, without the QC surveyor knowing the results of the initial survey

The RCT performing the initial survey may perform the QC measurements, provided that a different instrument is utilized, and if a different RCT is not available

[B] Utilize a different instrument than was utilized for the initial survey

Statistically, any instrument (of the same model) that passes the calibration QC checks may be used

[C] **WHEN** the QC surveys for a survey package are complete,
THEN review the survey package and ensure the QC surveys were performed as intended

[D] Correct or have corrected by the RCT(s) any errors found, as per 3-PRO-165-RSP-07 02, Contamination Monitoring Requirements

[E] Sign the survey package as required and forward it to the RE

RCT

[3] **WHEN** directed by the RCT Technical Supervisor,
THEN perform the total surface activity measurement surveys, without reviewing the initial survey results

NOTE *Instruments will be performance checked before and after use, or shiftly if in continuous use, in accordance with PRO-478-RSP-16 04, Radiological Survey/Sample Data Quality Analysis for Final Status Survey*

[4] Clearly mark the replicate survey results to show that they are QC surveys and reference the initial survey for identification

[5] Complete the survey package documentation in accordance with 3-PRO-165-RSP-07 02, Contamination Monitoring Requirements and provide it to the RCT Technical Supervisor

9.2 Sample Quality Control

Analytical Services Division (ASD) conducts an extensive quality assurance (QA) program that includes the vendors with which it contracts for analyses The laboratories participate in an inter-laboratory comparison Standards are submitted to the laboratory as single- and/or double-blind samples In addition, the laboratory performs the following internal quality control checks on performance evaluation standards, laboratory control samples, laboratory duplicates, and preparation blanks Since these are not a part of the data quality analysis addressed in RSP-16 04, they are not required by this procedure They are, however, to be reviewed to ensure ASD's QA program is functioning as intended and described in its procedures

RE

[1] **WHEN** a sample data package is received from ASD,
THEN review the package to ensure the following data are present
- Documentation of sample results and duplicate sample results
- ASD verification and validation of sample and duplicate sample results

[2] **IF** any documentation is missing or is incomplete,
THEN contact ASD for completion or replacement of the data

[3] **WHEN** a survey package is received from the RCT Technical Supervisor,
THEN review the package to ensure surveys and documentation are complete as designed

[4] **IF** any survey or documentation is missing, incorrect, or incomplete,
THEN contact the RCTTS for completion or replacement of data as appropriate

[5] **WHEN** the survey/sample package is complete,
THEN provide the completed package to the project RE

9.3 Data Management

NOTE *Separate and different records storage requirements may exist for different buildings, project, or companies Copies may be generated to satisfy additional record systems requirements provided there is no adverse impact on the quality and timeliness of the Site records system*

All

[1] Record data as required by the Site RCM, various RSPs, and the survey package

It is recommended that a set of records be retained in the project's records

10 RECORDS PROCESSING INSTRUCTIONS

The following documents are handled or initiated during performance of the activities described in this procedure

Record Identification	Record Type	Protection/Storage	Processing Instructions
In process Chain-of-Custody, Survey package records, and sample data	QA Record	Responsible Manager shall implement a reasonable level of protection for in-process QA records to prevent loss or degradation Records shall be stored in standard office filing systems	Continued prescribed processing of documents Upon completion of processing, approval and authentication records will be transmitted to the applicable Records Center (e g , Program/Project Records) in accordance with applicable approved site procedures under 1-V41-RM-001, Records Management Guidance for Records Sources Original sample data received from off-site laboratories is maintained by ASD Required copies of sample data are provided to the projects as necessary Source One provides archive services for the records
Completed Forms and documents as identified above	QA Record	Responsible Manager shall implement a reasonable level of protection for QA records to prevent loss or degradation in conjunction with Site Records Management organization to assure reasonable level of controls are being implemented	When inactive, as defined in 1-V41-RM-001, Records Management Guidance for Records Sources, transfer to Site Records Management for archiving in accordance with 1-V41-RM-001

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11. REFERENCES

The following documents are either directly referenced or used in the development of this procedure

ANSI N323, American National Standard Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments

CAS SOP-003, Sampling for Waste Characterization

Decommissioning Program Plan

GR01, General Laboratory Requirements

GR02, Electronic Data Deliverables

GR03, BOA Implementation Requirements

Health Physics Instrumentation (HPI) Manual

MAN-076-FDPM, Facility Disposition Program Manual

MAN-102-SRCM, Rocky Flats Environmental Technology Site Radiological Control Manual (Site RCM)

MAN-127-PDSP, Pre-Demolition Survey Plan (also referred to as Site PDSP)

National Basic Ordering Agreement (BOA)

NUREG-1575, Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)

PRO-475-RSP-16 01, Radiological Survey/Sampling Package Design, Preparation, Control, Implementation and Closure

PRO-476-RSP-16 02, Pre-Demolition (Final Status) Radiological Surveys of Surfaces and Structures

PRO-477-RSP-16 03, Radiological Samples of Building Media

PRO-478-RSP-16 04, Radiological Survey/Sample Data Quality Analysis for Final Status Survey

PRO-480-RSP-16 06, Radiological Background Determination

RC01, Isotopic Determinations by Alpha Spectroscopy

RC02, Tritium Analysis by Liquid Scintillation Counting (LSC)

RC04, Gross Alpha and Gross Beta Analysis by Gas Flow Proportional Counting

RCO5, Radiometric Strontium by Gas Proportional Counting (GPC)

RCO6, Total Uranium by Laser-Induced Phosphorescence

Rocky Flats Cleanup Agreement (RFCA)

1-V41-RM-001, Records Management Guidance for Records Sources

3-PRO-112-RSP-02 01, Radiological Instrumentation

3-PRO-165-RSP-07 02, Contamination Monitoring Requirements

3-PRO-212-RSP-18 01, Guidance for Management of Records in Radiological Safety

PRO-543-ASD-002, Initiation, Preparation, and Implementation of Chain-of-Custody Forms

10 CFR 830 120, Quality Assurance Requirements

10 CFR 835, Occupational Radiation Protection

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